

**IN THE SPECIFICATION:**

Please add the following subtitle and paragraph beginning on page 1, line 1 as follows:

**Cross Reference To Related Application**

This application is related to Applicants' concurrently filed application Attorney Docket No. PET-1854, entitled "IMPROVED ROTARY VALVE", based on French Application 99/07.308 filed June 9, 1999, now patent 6,537,451 issued March 25, 2003.

Please replace the paragraph beginning on page 1, line 22 with the following amended paragraph:

For separation columns by adsorption in which fluid circulations exist (injection, extraction or draw-off), the mat can be equipped with a fluid distribution device that comes, for example, in the form of a perforated ring that is mounted on the latter. Several ~~hoses~~ conduits start from this ring to distribute and/or to draw off fluids in or from a distributing-collecting chamber.

Please replace the paragraph beginning on page 7, line 3 with the following amended paragraph:

One of the means can be a rotary valve that makes it possible to link several groups of ~~hoses~~ conduits: group  $G_1$ , group  $G_2$  and group  $G_3$ , whereby said valve comprises at least:

Please replace the paragraph beginning on page 9, line 12 with the following amended paragraph:

- Figure 6 shows a diagram of a chamber that comprises a mat as described in Figure 4A as well as its fluid circulation ~~hoses~~ conduits,

Please replace the paragraph beginning on page 12, line 8 with the following amended paragraph:

Openings 7i are drilled into, for example, the mass of a part to generate several passage ~~holes~~ conduits 21i as well as a space 22 approximately at the center of the solid part. Space 22 communicates with ~~holes~~ conduits 21i, space 3a (Figure 1A) and opening 6.

Please replace the paragraph beginning on page 14, line 16 with the following amended paragraph:

A main ~~hole~~ conduit 36 that is connected with orifice 5 empties into a mat element M<sub>i</sub>. A fluid moves, for example, from a source that is outside of the chamber to the inside of the central tube via ~~hole~~ conduit 36 and orifice 6 to be distributed inside the chamber through openings 7i.

Please replace the paragraph beginning on page 14, line 21 with the following amended paragraph:

The distribution can be done directly starting from these openings, or else via ~~holes~~ conduits 37i that are each connected to an opening 7i and that empty into a distributing-collecting-mixing chamber.

Please replace the paragraph beginning on page 15, line 4 with the following amended paragraph:

The mat is formed by several mat elements that have a structure that is identical to the one that is described in Figure 4A. The mat elements are assembled by joints that are similar to joints 32 that are described in Figure 5. In this case, a ~~hole~~ conduit 36 is connected with an

annular space (3a, 3a') (Figure 3), whereby the number of these ~~hoses~~ conduits per mat element is equal to the number of parts 3, 3' (Figure 3) that constitute the mat element.

Please replace the paragraph beginning on page 17, line 3 with the following amended paragraph:

The main fluid circulates along the longitudinal axis or main axis of the column, it is extracted via a ~~hose~~ conduit 46, recycled via a pump 47 and a ~~hose~~ conduit 48 to the top of the column. The column can be arranged along an approximately vertical axis or else an approximately horizontal axis. The main fluid flows to the inside of the column according to a piston or plug flow-type flow, whereby the composition and the flow front are essentially uniform at all points of the section of the column. A fluid distribution device (not shown in the figure) that is connected with ~~hose~~ conduit 48 optionally can equip the head of the column.

Please replace the paragraph beginning on page 20, line 17 with the following amended paragraph:

The bypass fluid distribution circuit comprises:

- ◆ a ~~hose~~ conduit 71 that empties into space 3c and runs through spaces 3b, 3a and sealing element 5a. ~~Hose~~ Conduit 71 is connected by a flange 72 to a line 73 that is preferably flexible and located inside the mat in space 2 that is located above space 3,
- ◆ a ~~hose~~ conduit 74, one of whose ends is preferably arranged at space 3a, but that, without exceeding the scope of the invention, can be arranged at space 3b. ~~Hose~~ Conduit 74 runs through space 3a (at least in part), and spaces 3b and 3c, separation means 8 and seals 5d and 5c. It is connected by a flange 75 to a

line 76 that is preferably flexible and that extends inside the mat element. Line 76 connects, for example, ~~hose~~ conduit 74 of element M<sub>1</sub> to line 72 of element M<sub>2</sub>. This line 76 can be equipped with a means that makes it possible to control the passing of fluid, for example a nonreturn valve 77.

Please replace the paragraph beginning on page 22, line 5 with the following amended paragraph:

Elements M<sub>1</sub> and M<sub>2</sub> respectively comprise two spaces 3a and 3a' that each communicate with openings 6 and 6', transfer ~~hoses~~ conduits Ti and Ti' as well as spaces 3b and 3b' that communicate with orifices that are referenced 7i and 7i'.

Please replace the paragraph beginning on page 23, line 7 with the following amended paragraph:

The fluids that are involved in the process circulate through ~~hoses~~ conduits that can be classified in three groups, defined, for example, according to their function. The connection between the different groups is carried out, for example, according to a predetermined sequence.

Please replace the paragraph beginning on page 23, line 12 with the following amended paragraph:

In a process for separation that uses four process fluids such as feedstock, extract, raffinate and desorbent, the different groups can be specified in the following manner:

- ◆ GROUP 1, G<sub>1</sub> = the ~~hoses~~ conduits that allow the transfer of fluids from said process fluids, such as extract, raffinate, feedstock and desorbent;

- ◆ GROUP 2,  $G_2$  = the ~~hoses~~ conduits that allow the linking to be carried out between the different openings of the rotary valve;
- GROUP 3,  $G_3$  = the ~~hoses~~ conduits that allow a process fluid to communicate with a bed of a separation column or between two beds (bypass fluid).

Please replace the paragraph beginning on page 23, line 24 with the following amended paragraph:

The concept of group that is defined for ~~hoses~~ conduits can be extended to the fluids in question.

Please replace the paragraph beginning on page 24, line 5 with the following amended paragraph:

Starting from the center of the stator, four approximately concentric grooves F, R, E, S are arranged on upper face 101. Each of these grooves is intended for the passage of a process fluid, whereby the distribution can be done according to an order of F, R, E, S or any other order. Each of the grooves is connected with a ~~hose~~ conduit 103 that runs through the thickness of the stator and allows the passage of, for example, process fluids that are obtained from ~~hoses~~ conduits 50, 51, 52, 53.

Please replace the paragraph beginning on page 24, line 21 with the following amended paragraph:

- Openings 105 that are each connected to a transfer line  $L_i$  and with a passage surface  $S_i$  are distributed, for example, on a circle  $C_{ext}$  (Fig. 14) that is arranged

toward the periphery of the stator. The number of these openings 105 is equal to the number of transfer hoses conduits Li,

Please replace the paragraph beginning on page 26, line 3 with the following amended paragraph:

- ◆ means 110 such that the "U"-shaped hoses conduits for linking an opening 109 with an opening 105 of the stator. In this case of application, hoses conduits 110 are four in number,

Please replace the paragraph beginning on page 27, line 22 with the following amended paragraph:

The four "U"-shaped hoses conduits 110 link an opening of a groove with an outside hose conduit that allows the introduction or the removal of a process fluid.

Please replace the paragraph beginning on page 28, line 1 with the following amended paragraph:

Thus, in Figure 15,

- the raffinate is removed from bed 4 by passing through an opening 109 (R), a hose conduit 110 (R), an opening 103 (R) and hose conduit 53,
- the feedstock is injected into bed 10 via hose conduit 50, an opening 103 (F), a hose conduit 110 (F), an opening 109 (F),
- the extract is drawn off from bed 16 by passing through an opening 109 (E), a hose conduit 110 (E), an opening 103 (E) and hose conduit 52,

- the solvent or desorbent is introduced into bed 20 via ~~hese~~ conduit 51, an opening 103 (S), a ~~hese~~ conduit 110 (S), an opening 109 (S).

Please remove the last paragraph on page 28A in its entirety.